includes an autofocusing light beam of a second wavelength. The autofocusing light beam is directed to reflect off of the object plane. The autofocusing detection system further includes an autofocusing detection device having an iris and a light detector, and a detection system lens. The detection system lens directs the reflected autofocusing light beam to the autofocusing detection device. The autofocusing detection device receives the reflected autofocusing light beam from the detection system lens. The iris permits at least a portion of the reflected autofocusing light beam to pass through an aperture of the iris. The light detector measures the intensity of the portion of the reflected autofocusing light beam that passes through the aperture of the iris in order to detect the distance that the image of the object plane in the imaging system is displaced from a desired focus reference surface.

On page 21, replace the paragraph starting at line 8 with the following paragraph:

In the example shown in Figs. 3A-3C, the autofocusing light beam source 39 generates and projects the autofocusing light beam 40 in a first direction parallel to the first optical axis 56. The autofocusing light beam 40 strikes the first beamsplitter 42 of the autofocusing detection system and is reflected along a second optical axis 64 to the second beam splitter 44 of the autofocusing system. Alternately, the apparatus could be configured so that the autofocusing light beam source 39 generates the autofocusing light beam 40 directly onto the second beamsplitter 44, without needing the first beamsplitter 42. In another possible configuration, the light source 39 for the autofocusing beam could generate the autofocusing light beam 40 directly to the objective lens 14.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

On page 21 (spanning onto page 22), replace the paragraph starting at line 18 with the following paragraph:

The beamsplitters 42, 44 used in the present invention may be of any conventional type known in the art. For example, the beamsplitters 42, 44 may be partially reflecting conventional beamsplitters. Beamsplitter 44 is preferably configured to transmit all of the illumination light beam of wavelengths λe and λf while reflecting the autofocusing light beams of a wavelength λa. In one example, beam splitter 42 is preferably configured to use a polarizing beam splitter and a ¼ wavelength plate. As shown in Fig. 3A, upon striking the second beamsplitter 44, the autofocusing light beam 40 is reflected toward the objective lens 14 along the first optical axis 56. The beamsplitter 44 is configured to reflect the autofocusing light beam of wavelength λa. If the beams are operated simultaneously, the beam splitter 44 also allows the reflected illumination light beam 52 to pass therethrough as previously described.

IN THE CLAIMS:

Please cancel claims 38-44 and amend claims 1, 23, 24, 28, 31, and 32, as follows:

1. (Amended) An apparatus for automatically focusing an image of an object plane in a microscope, comprising:

an optical system configured to form an image of an object plane to be observed, said optical system comprising:

an objective lens configured to focus on the object plane,

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com